

Supplementary Information

Surface modification of bioactive glasses for successful incorporation with poly (lactic-co-glycolic acid) (PLGA)

Nishant Jain^a, Johannes Schmidt^b, Oliver Görke^a, David Karl^a, Aleksander Gurlo^a, Franziska Schmidt^{a,c,*}

^a Chair of Advanced Ceramic Materials, Institute of Material Science and Technology, Faculty III Process Sciences, Technische Universität Berlin, Straße des 17. Juni 135, 10623 Berlin, Germany

^b Department of Chemistry, Division of Functional Materials, Technische Universität Berlin, Hardenbergstr. 40, 10623 Berlin, Germany

^c currently at: Department of Prosthodontics, Geriatric Dentistry and Craniomandibular Disorders, Charité-Universitätsmedizin Berlin, Corporate Member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, 14197 Berlin, Germany

* Corresponding author: franziska.schmidt2@charite.de

1. EDX analysis

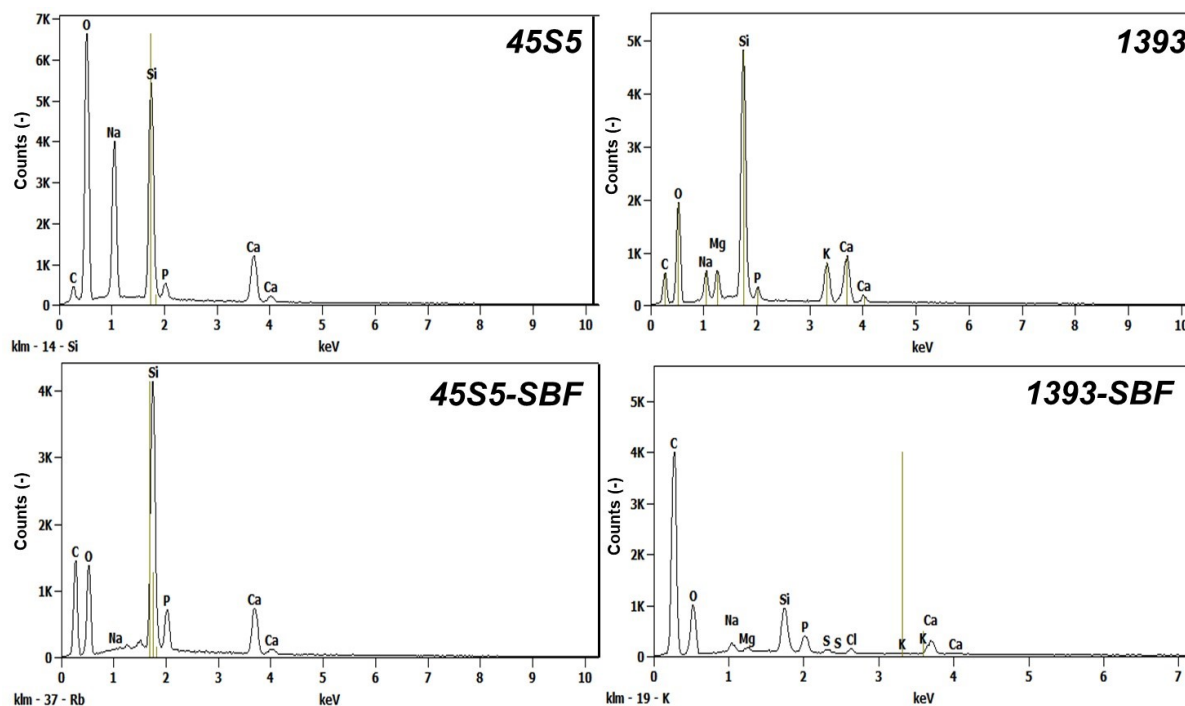


Figure S1. EDX 'point and shoot' spectra of as received and modified bioactive glasses

Table S1. Elemental composition of different BG in at%. Nominal composition was calculated from composition in mol% given by Maçon et al. ²¹. EDX values were determined by six point measurements per sample and are given in mean value and standard deviation

Bioactive glasses	Na	Mg	Si	P	K	Ca	Ca/P ratio
Nominal composition 45S5 ²⁰	35.4	0	33.6	1.6	0	29.4	18.38
45S5 (EDX)	27.7± 6.9%	-	44.9± 3.7%	3.9± 0.5%	-	23.6± 3.0%	6.05
45S5-SBF (EDX)	0.2± 0.3%	-	74.5± 11.8%	7.9± 3.6%	-	17.4± 8.0%	2.20
Nominal composition 1393 ²⁰	9.3	9.0	42.5	1.2	12.3	25.8	21.50
1393 (EDX)	9.0± 1.7%	6.6± 0.8%	49.6± 0.5%	3.0± 0.2%	12.4± 1.1%	19.4± 1.9%	6.47
1393-SBF (EDX)	4.3± 2.3%	2.2± 0.4%	52.7± 7.5%	13.7± 3.3%	1.6± 2.0%	25.4± 3.8%	1.85

2. XPS analysis survey scans

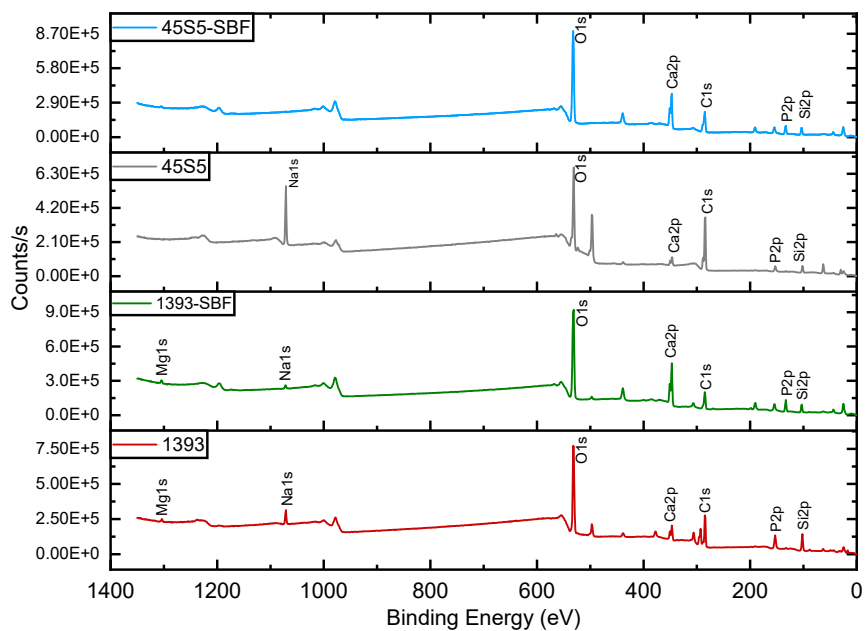


Figure S2: XPS survey scans of as received and surface treated bioactive glasses

3. Zeta Potential

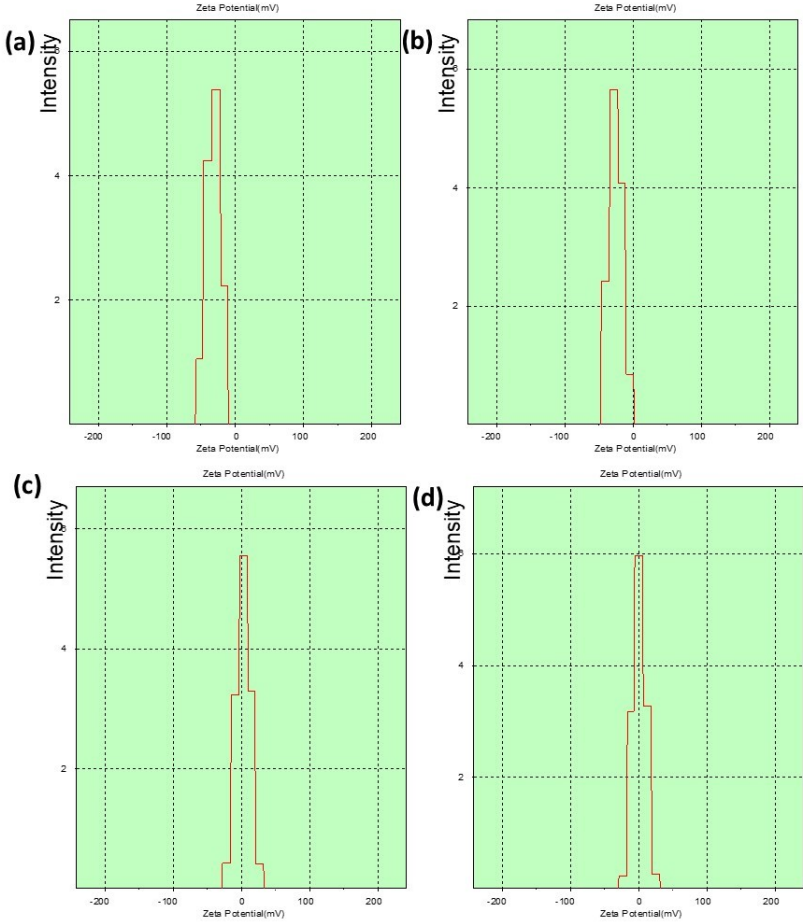


Figure S3: Zeta potential distribution of bioactive glasses (a) 45S5 (b) 1393 (c) 45S5-SBF (d)

1393-SBF

4. Particle Size Distribution

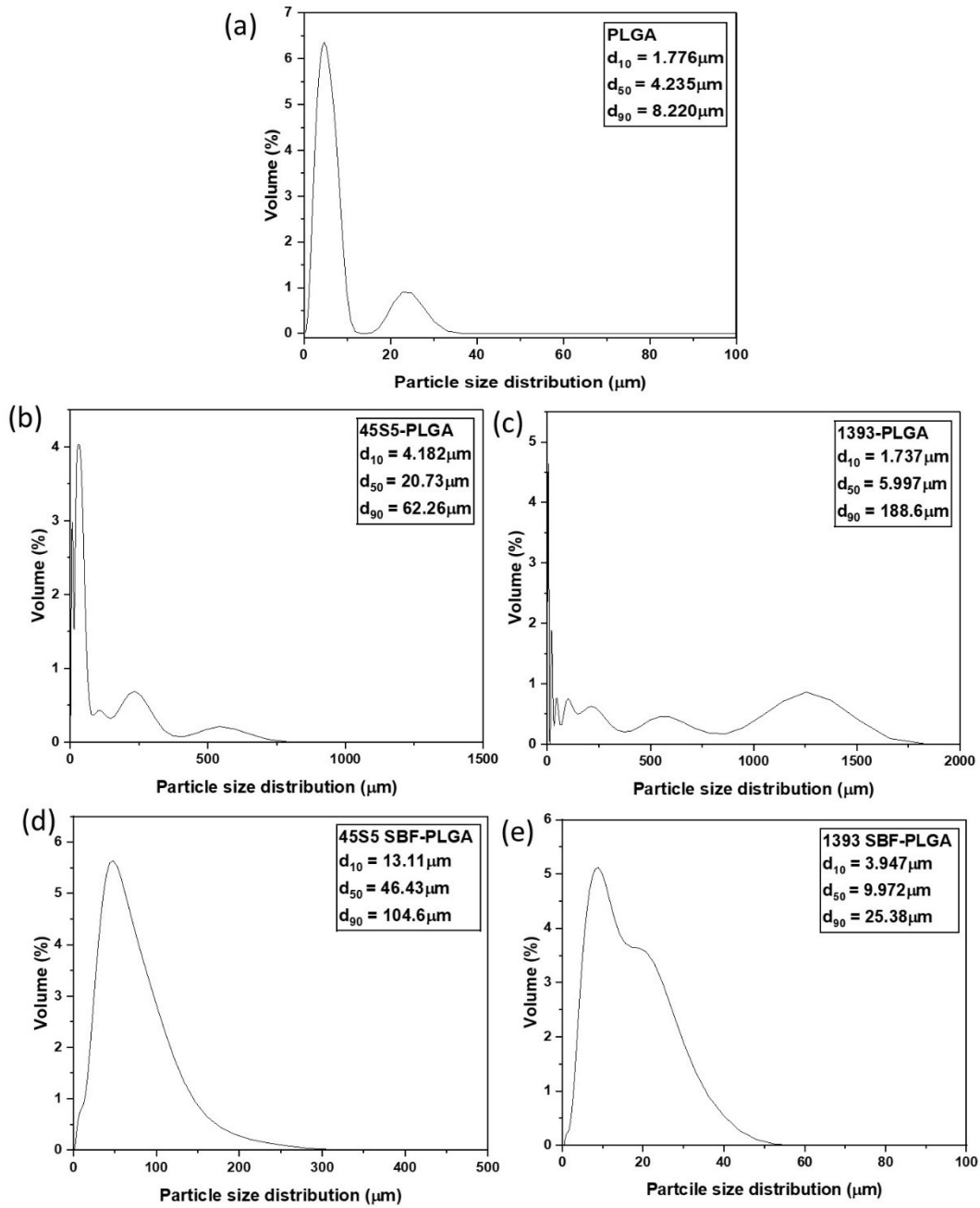


Figure S4: Particle size distribution of microspheres (a) PLGA (b) 45S5-PLGA (c) 1393-PLGA (d)

45S5 SBF-PLGA (e) 1393 SBF-PLGA